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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/581,665

07/02/2007

Richard H. Abram

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7590

06/26/2008

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EXAMINER

FORDE, DELMA ROSA

ART UNIT

PAPER NUMBER

2828

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DELIVERY MODE

06/26/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/581,665	Applicant(s) ABRAM ET AL.	
	Examiner Delma R. Fordé	Art Unit 2828	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 July 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 June 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>09/27/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

The priority has been considered by the examiner.

Information Disclosure Statement

The references cited in the Information Disclosure Statement (IDS) have been considered by the examiner.

Drawings

The drawings submitted on 070/2/2007 have been considered by the examiner.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 7 -9 are rejected under 35 U.S.C. 102(b) as being anticipated by Zheng (2003/0039284).

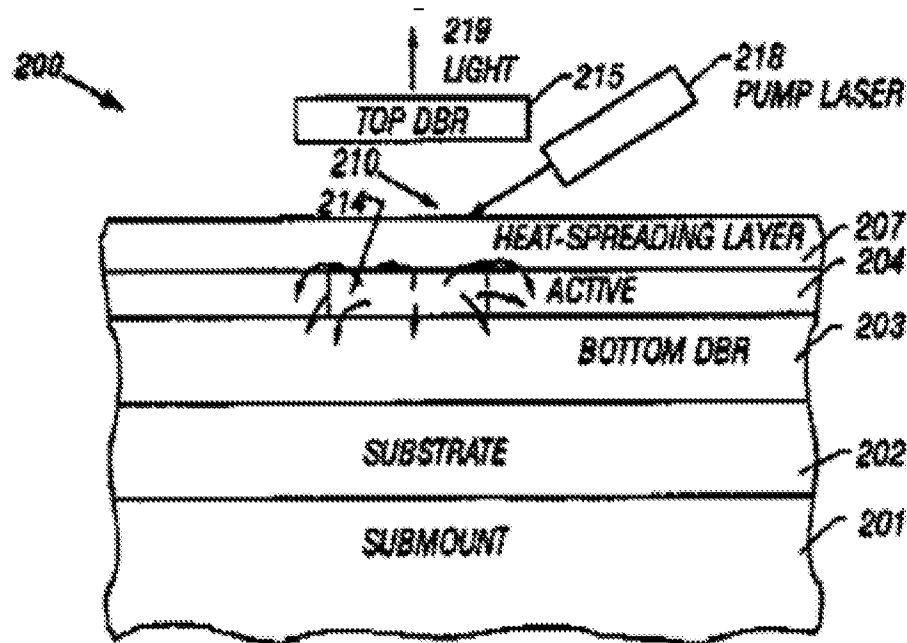


FIG. 2

Regarding claims 1 and 7, Zheng discloses a Vertical External Cavity Surface Emitting Laser comprising: a semiconductor wafer structure (see Figure. 2, Characters 101 and 202, the reference calls “submount and substrate”), containing a gain medium (see Figure. 1, Character 204, the reference call “ active”) and a Bragg reflecting region (see Figure. 1, Character 203, the reference call “Bottom DBR” and Paragraphs [0030]); and a heat spreader (see Figure. 2, Character 207) associated with the wafer structure such that the gain medium (see Figure. 2, Character 204) is located between the heatspreader (see Figure. 2, Character 207, Paragraphs [0026, 0037,0039]) and the Bragg reflecting region (see Figure. 2, Character 203), wherein the heatspreader (see

Figure. 2, Character 207) comprises a non-birefringent material (Paragraphs [0067]) and heatspreader comprises a single diamond crystal (Paragraphs [0067]).

Regarding claims 8 and 9, Zheng discloses a lasing is achieved by optical excitement of the gain medium (see Figure. 2, Character 204) and a lasing is achieved by electrical excitement of the gain medium (see Figure. 2, Character 204), (Paragraphs [0026, 0029, 0032]).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

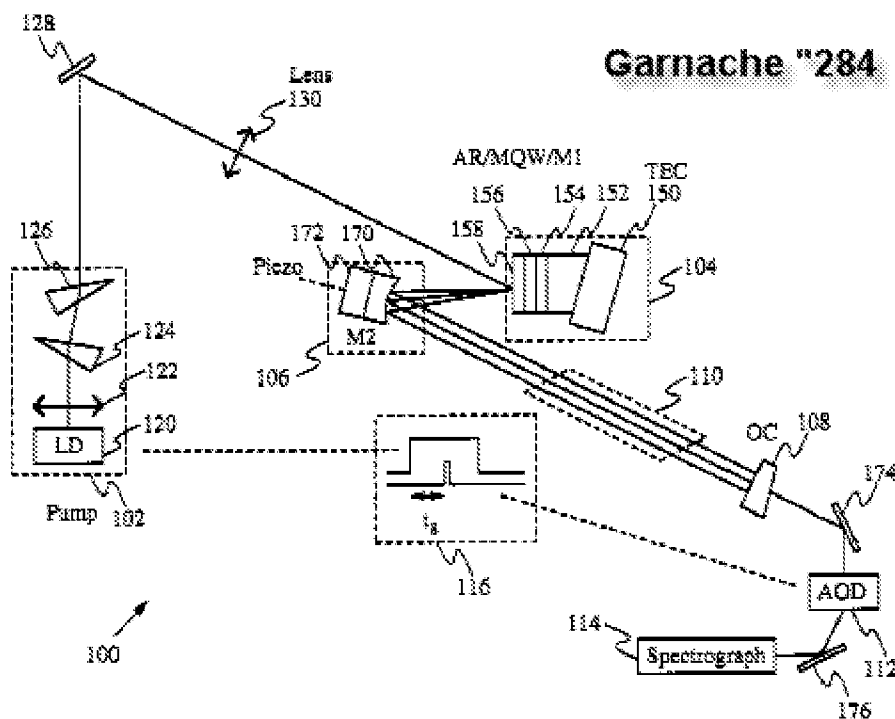
Claims 2 – 6 and 10 – 16 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Zheng (2003/0039284) in views of Garnache et al (2002/0071463).

Regarding claims 2, 3 and 5, Zheng discloses a Vertical External Cavity Surface Emitting Laser comprising: a semiconductor wafer structure (see Figure. 2, Characters 101 and 202, the reference calls “submount and substrate”), containing a gain medium (see Figure. 1, Character 204, the reference call “ active”) and a Bragg reflecting region (see Figure. 1, Character 203, the reference call “Bottom DBR” and Paragraphs [0030]); and a heat spreader (see Figure. 2, Character 207 and Paragraphs

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[0026, 0037,0039]) associated with the wafer structure such that the gain medium (see Figure. 2, Character 204) is located between the heatspreader (see Figure. 2, Character 207) and the Bragg reflecting region (see Figure. 2, Character 203), wherein the heatspreader comprises a first surface (see Figure. 2, Character 207).

Zheng discloses the claimed invention except of anti-reflection coating. Garnache teach an anti-reflection coating. However, it is well known in the art to apply anti-reflection coating as discloses by Garnache in Paragraphs [0011, 0084 and 0107]. Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was to apply the well known anti-reflection coating as suggested by Garnache to the laser of Zheng, because could be used to reduce reflection and improves the efficiency of the system since less light is lost (see Paragraphs [0107] of Garnache).



Regarding claim 4, Zheng discloses a heatspreader comprises a non-birefringent material (abstract, e.g. diamond crystal (Paragraphs [0067]))

Regarding claim 6, Zheng discloses the first surface of the heatspreader comprises a wedge (see Figure. 2).

Regarding claims 10 and 11, Garnache discloses an intracavity polarization selecting element that provides a first means for selecting the operating frequency of the laser and the intracavity polarization selecting element comprises a birefringent filter orientated at Brewster's angle (Paragraphs [0092 and 0117]) .

Regarding claim 12, Garnache discloses a laser further comprises an intracavity etalon that provides a second means for selecting the operating frequency of the laser (Paragraphs [0016, 0078, 0100 and 0115]),

Regarding claim 13, Garnache discloses an external reference cavity that allows for the frequency stabilization of the laser output to a side of a transmission peak of the external cavity (Paragraphs [abstract, 0011, 0055-56, 0079, 0090]) .

Regarding claim 14, Garnache discloses a laser comprises a three mirror folded cavity arrangement (Paragraphs [0080]).

Regarding claim 15, Garnache discloses the laser further comprises a cavity mirror mounted on a first piezoelectric crystal (see Figure. 1, Character 172, Paragraphs [0092 and 0117]) and an output coupler mounted (see Figure. 1, Character OC). Garnache discloses the claimed invention except second piezoelectric. It would have been obvious to one having ordinary skill in the art at the time the invention was made to more than one piezoelectric, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8.

Regarding claim 16, Garnache discloses the laser further comprises a pair of Brewster plates and a cavity mirror mounted on a piezoelectric crystal wherein the combined movement of the Brewster plates and the cavity mirror provide a second means for frequency tuning the output of the laser (Paragraphs [0092 and 0117]).

Claims 17 – 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zheng (2003/0039284) in view of Garnache et al (2002/0071463) in view of Weiss et al. (6,864,626).

Regarding claims 17 and 26, Zheng discloses a semiconductor wafer structure (see Figure. 2, Characters 101 and 202, the reference calls “submount and substrate”),

containing a gain medium (see Figure. 1, Character 204, the reference call “ active”) and a Bragg reflecting region (see Figure. 1, Character 203, the reference call “Bottom DBR” and Paragraphs [0030]); and a heat spreader (see Figure. 2, Character 207 and Paragraphs [0026, 0037,0039]) associated with the wafer structure such that the gain medium (see Figure. 2, Character 204) is located between the heatspreader (see Figure. 2, Character 207) and the Bragg reflecting region (see Figure. 2, Character 203), wherein the heatspreader comprises a material, heatspreader comprises a single diamond crystal (see Figure. 2, Character 207, (Paragraphs [0032, 0036 – 0037, 0067])).

Zheng discloses the claimed invention except apparatus for selecting and stabilizing the operating frequency of the laser. Garnache teach an apparatus for selecting and stabilizing the operating frequency of the laser. However, it is well known in the art to apply apparatus for selecting and stabilizing the operating frequency of the laser as discloses by Garnache in Paragraphs [0001]. Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was to apply the well known apparatus for selecting and stabilizing the operating frequency of the laser as suggested by Garnache to the laser of Zheng, because could may be made stable at one of a selectable plurality of modes and which are more readily fabricated and with less complexity (see Paragraphs [0001] of Garnache).

Zheng discloses the claimed invention except of scanning. Weiss teach a scanning. However, it is well known in the art to apply scanning as discloses by Weiss in Column 3, Lines 45 – 51 and Column 5, Lines 14 – 20. Therefore, it would have been

obvious to a person having ordinary skill in the art at the time the invention was to apply the well known scanning as suggested by Weiss to the laser of Zheng, because could be used to scanning a frequency laser.

Regarding claims 18 and 24, Zheng discloses the claimed invention except of anti-reflection coating. Garnache teach an anti-reflection coating. However, it is well known in the art to apply anti-reflection coating as discloses by Garnache in Paragraphs [0011, 0084 and 0107]. Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was to apply the well known anti-reflection coating as suggested by Garnache to the laser of Zheng, because could be used to reduce reflection and improves the efficiency of the system since less light is lost (see Paragraphs [0107] of Garnache).

Regarding claim 19, Garnache discloses the laser as claimed in claim 17 wherein the apparatus for selecting and stabilizing the operating frequency of the laser comprises an intracavity polarization selecting element that provides a first means for selecting the operating frequency of the laser (Paragraphs [0092 and 0117]).

Regarding claim 20, Garnache discloses a laser further comprises an intracavity etalon that provides a second means for selecting the operating frequency of the laser (Paragraphs [0016, 0078, 0100 and 0115]),

Regarding claim 21, Garnache discloses an external reference cavity that allows for the frequency stabilization of the laser output to a side of a transmission peak of the external cavity (Paragraphs [abstract, 0011, 0055-56, 0079, 0090])

Regarding claim 22, Garnache discloses the laser further comprises a cavity mirror mounted on a first piezoelectric crystal (see Figure. 1, Character 172, Paragraphs [0092 and 0117]) and an output coupler mounted (see Figure. 1, Character OC). Garnache discloses the claimed invention except second piezoelectric. It would have been obvious to one having ordinary skill in the art at the time the invention was made to more than one piezoelectric, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8.

Regarding claim 23, Garnache discloses wherein the apparatus for scanning the operating frequency of the laser comprises a pair of Brewster plates and a cavity mirror mounted on a piezoelectric crystal wherein the combined movement of the Brewster plates and the cavity mirror provides a second means for tuning the frequency output of the laser (Paragraphs [0092 and 0117]).

Regarding claim 25, Zheng discloses the first surface of the heatspreader comprises a wedge (see Figure. 2).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Delma R. Fordé whose telephone number is (571) 272-1940. The examiner can normally be reached on M - F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Min Sun Harvey can be reached on (571) -272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Delma R. Fordé/
Examiner, Art Unit 2828

/Minsun Harvey/

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Supervisory Patent Examiner, Art Unit 2828